Strategizing capacity development for life cycle management - cases from Vietnam and Malaysia

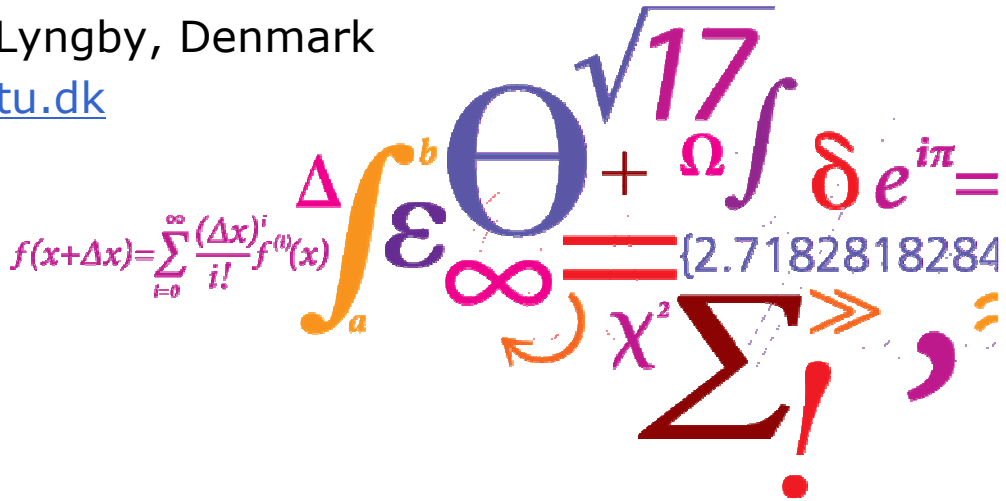
Wangel, Arne

Publication date:
2012

Document Version
Publisher's PDF, also known as Version of record

Strategizing capacity development for life cycle management - cases from Vietnam and Malaysia

By Arne Wangel
Technical University of Denmark,
DTU Systems and Management,
Building 424, DK-2800 Kgs. Lyngby, Denmark
E-mail: arwa@dtu.dk



DTU Management Engineering
Department of Management Engineering

The challenge

- Environmental and social standards have emerged in global trade to define mandatory, semi-voluntary, or voluntary criteria

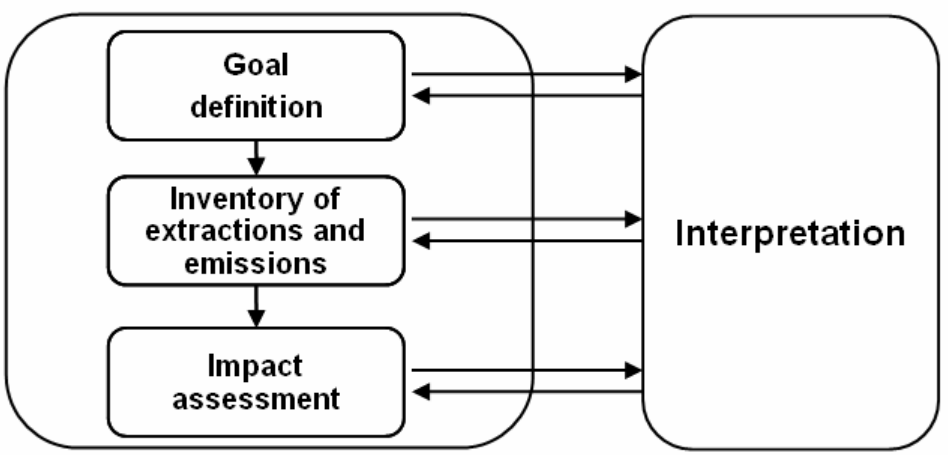
- As these standards develop in terms of numbers, complexity and range, the costs and technical challenges are of increasing concern not least to small- and medium scale companies, which lack the necessary financial, institutional or technical capacities

- OECD countries: 80% of world total research funding
  OECD: 1,5 – 4,0% of GDP allocated for research
  Developing countries: 0,5% of a smaller GDP for research

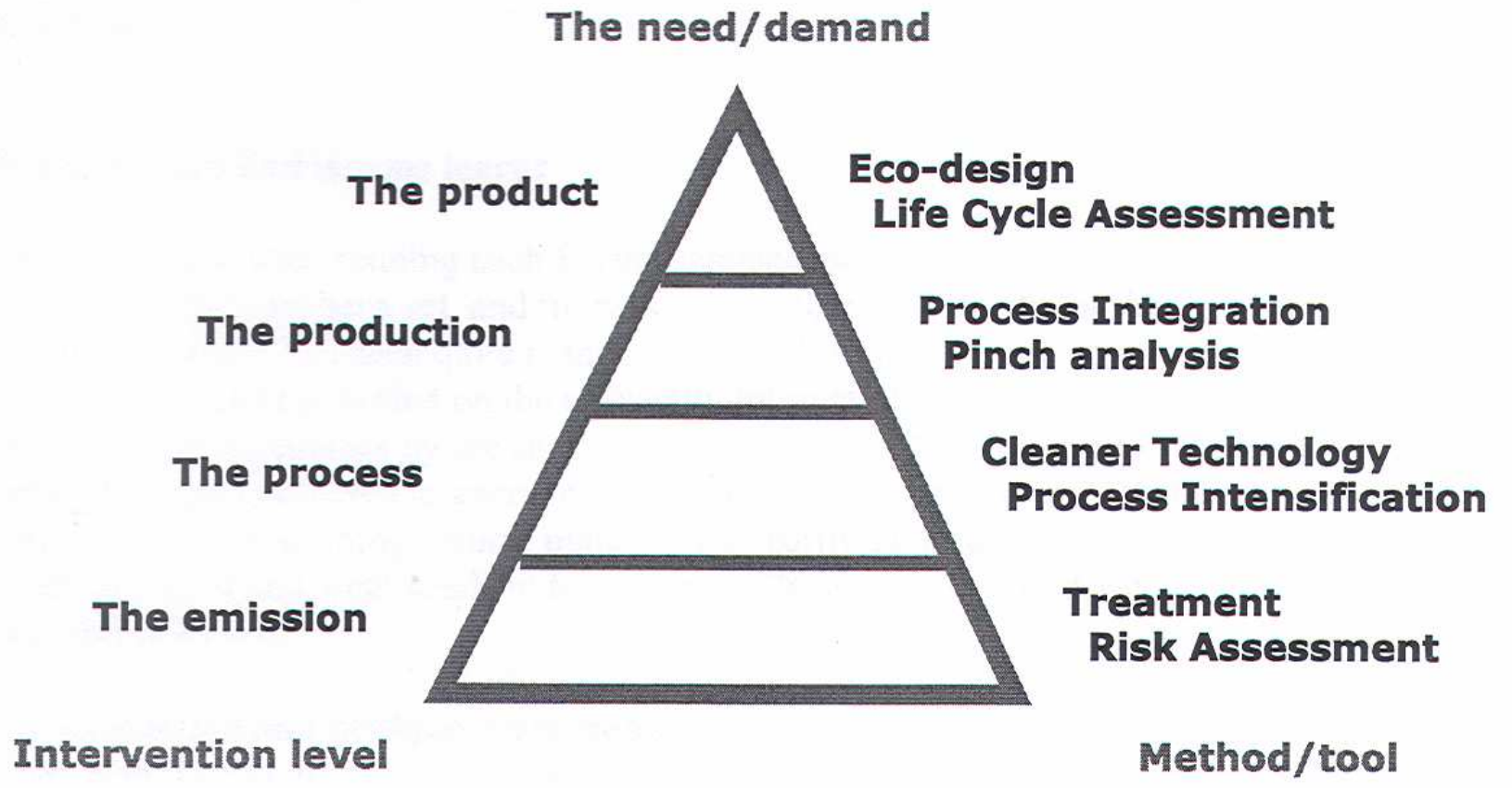
Life Cycle Assessment

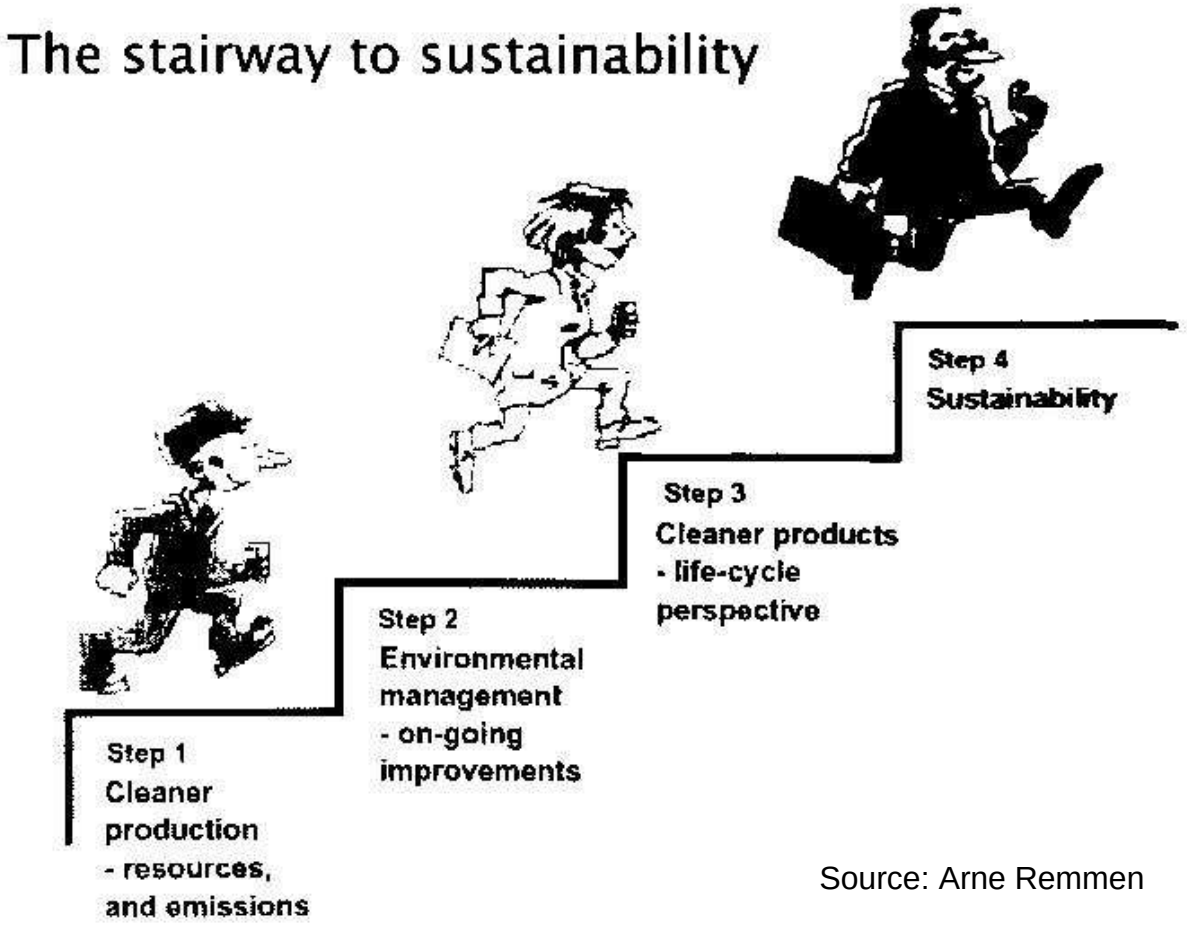
Awareness - Life Cycle Thinking

4 steps LCA tool cf. ISO standards



LCA as the latest tool of environmental management





Source: Arne Remmen

From Knowledge Transfer to Acquisition
A new paradigm for capacity development: 'Scan globally – reinvent locally!

	Current paradigm	New paradigm
Nature of development	Improvements in economic and social conditions	Societal transformation, including building of "right capacities"
Conditions for effective development cooperation	Good policies that can be externally prescribed	Good policies that have to be home-grown
The asymmetric donor-recipient relationship	Should be countered generally through a spirit of partnership and mutual respect	Should be specifically addressed as a problem by taking countervailing measures
Capacity development	Human resource development, combined with stronger institutions	Three cross-linked layers of capacity: individual, institutional and societal
Acquisition of knowledge	Knowledge can be transferred	Knowledge has to be acquired
Most important forms of knowledge	Knowledge developed in the North for export to the South	Local knowledge combined with knowledge acquired from other countries—in the South or the North

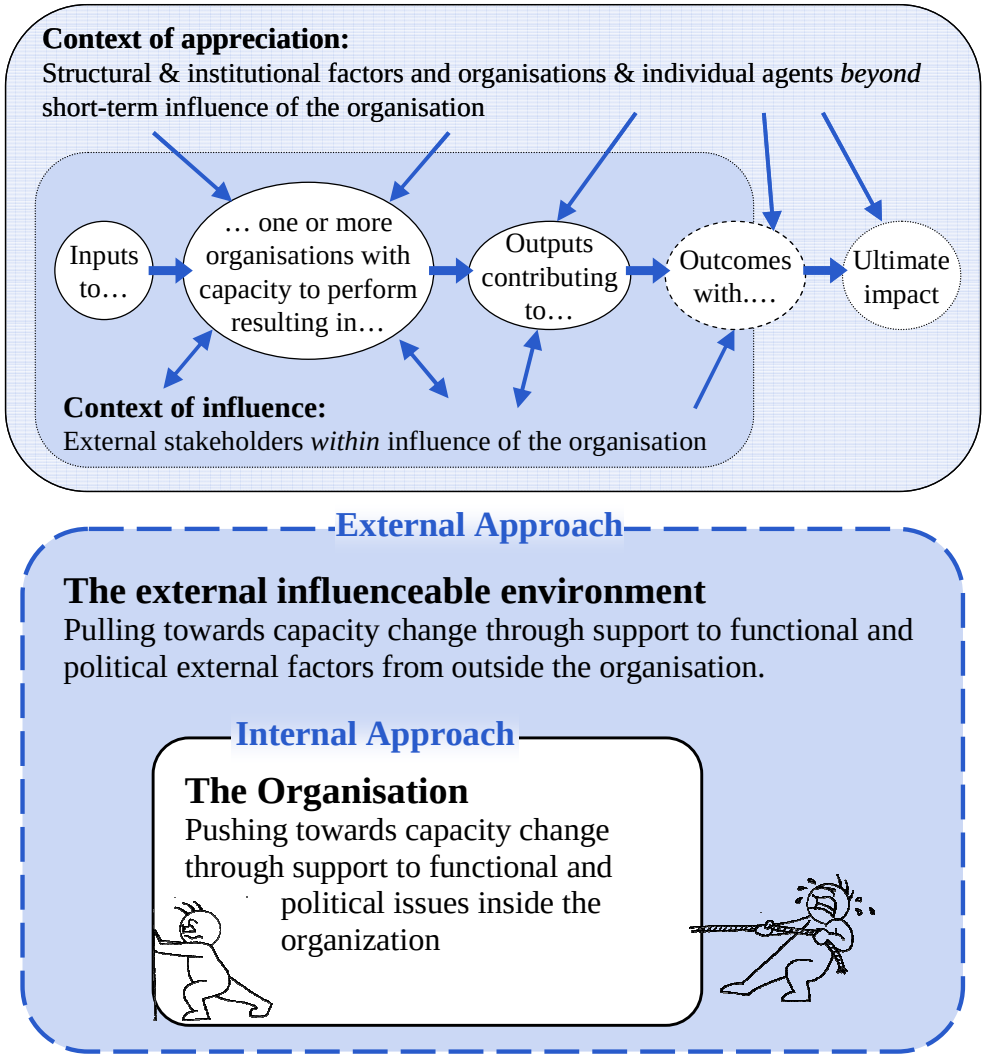
Source: UNDP 2002

‘Handing down the torch’

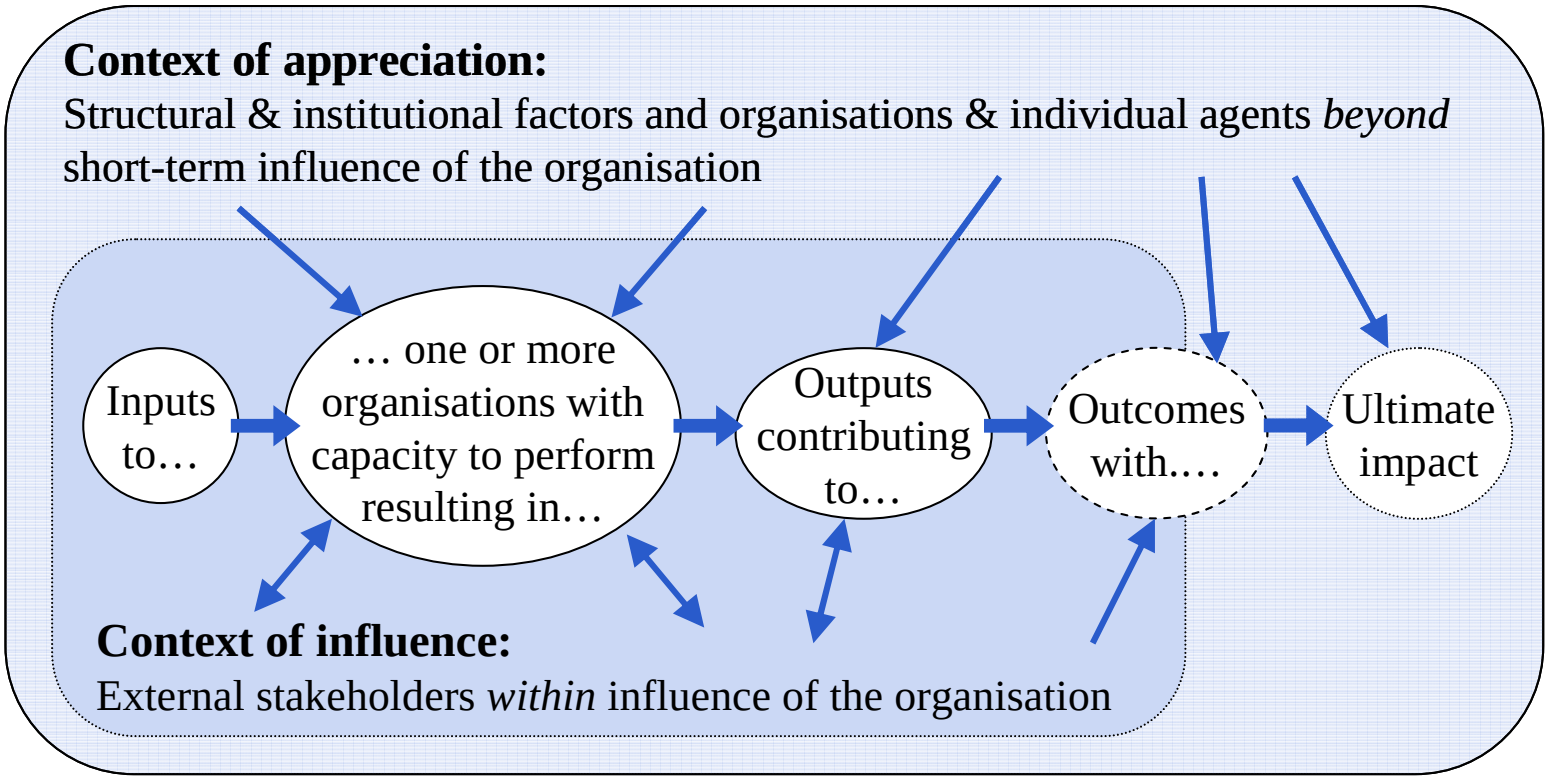
- Conventional sequence of interventions: Transferring tools, building knowledge bases and training professionals
- “Handing down the torch” to national stakeholders, thus, focussing on inputs (free software) to make system work,
- Observe comparative status of LCA penetration in various developing countries
- Ambition to build consensus and long-term knowledge networking
- Rhetoric of contextualising but no funds or vehicle to initiate local processes

Strategy to develop LCA capacities

- Case studies on the collection of data
- Exploring causes of data insufficiency
- Mapping stakeholders and their current capacities
- Identifying overall capacity constraints
- Focusing on 'internal' capacity constraints of selected company cases
- Dialogues with stakeholders on strategy options



Capacity development model

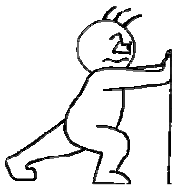


Internal:
Skills, systems, procedures
Leadership, relations, incentives

External:
Legal & adm. regulations, finance
Societal norms/values, political will

Source: Boesen & Therkildsen 2005

Capacity development typology

	Focus on the functional-rational dimension	Focus on the political dimension
 **Focus on factors *within* the organisation(s)**	1. Getting the job done	2. Getting power right and accommodating interests
 **Focus on factors in the *external* environment**	3. Creating an 'enabling' environment	4. Forcing change in the internal power relations

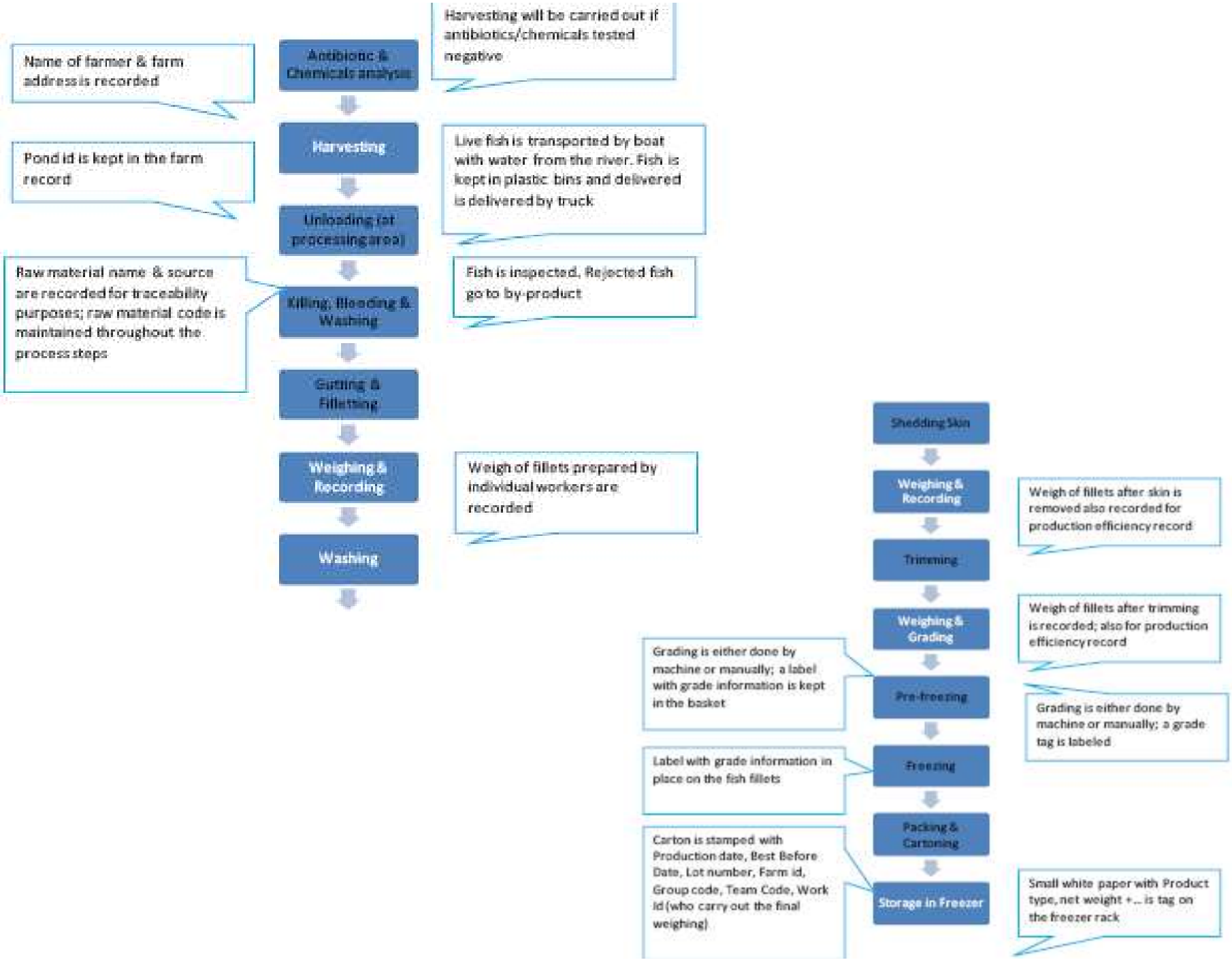
Source: Boesen & Therkildsen 2005

Vietnam: Aquaculture - pangasius

Design of a traceability system in Vietnam

Barriers for creating and communicating information in the product chain:

- **Large number of widely dispersed producers**
- **Inaccurate account keeping**
- **Computer literacy**
- **Business secrecy**
- **Secrecy towards public authorities (tax, prohibited drugs)**
- **Perception of position in the chain (primary producer vs. processor)**
- **Income alternatives to the chain**

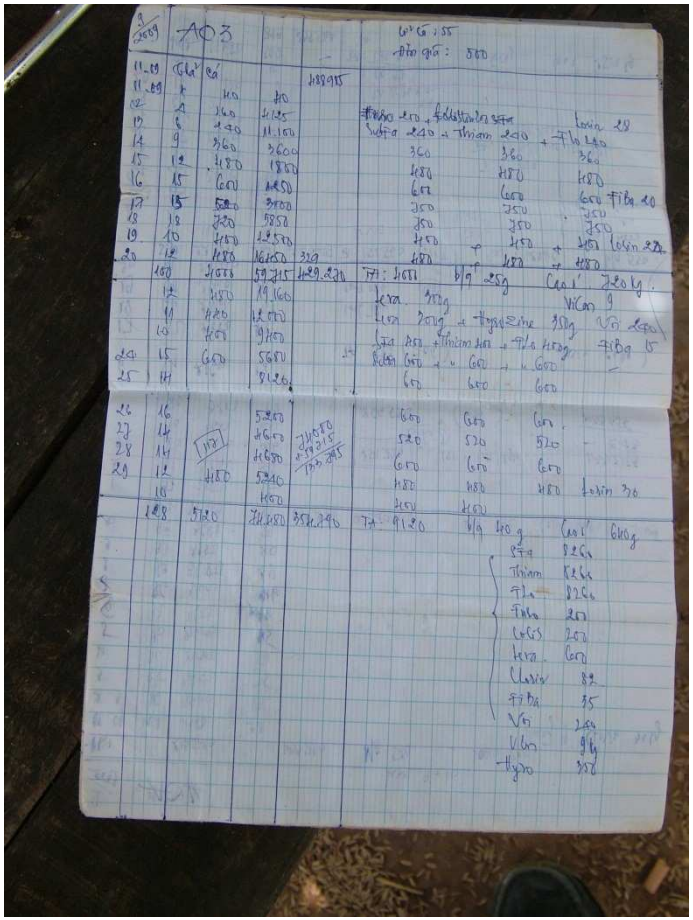

Name of farmer & farm address is recorded
Antibiotic & Chemicals analysis
Harvesting will be carried out if antibiotics/chemicals tested negative
Pond id is kept in the farm record
Harvesting
Live fish is transported by boat with water from the river. Fish is kept in plastic bins and delivered is delivered by truck
Unloading (at processing area)
Raw material name & source are recorded for traceability purposes; raw material code is maintained throughout the process steps
Killing, Bleeding & Washing
Fish is inspected, Rejected fish go to by-product
Gutting & Filleting
Weighing & Recording
Weigh of fillets prepared by individual workers are recorded
Washing
Shedding Skin
Weighing & Recording
Weigh of fillets after skin is removed also recorded for production efficiency record
Trimming
Weighing & Grading
Weigh of fillets after trimming is recorded; also for production efficiency record
Grading is either done by machine or manually; a label with grade information is kept in the basket
Pre-freezing
Grading is either done by machine or manually; a grade tag is labeled
Label with grade information in place on the fish fillets
Freezing
Packing & Cartoning
Carton is stamped with Production date, Best Before Date, Lot number, Farm id, Group code, Team Code, Work Id (who carry out the final weighing)
Storage in Freezer
Small white paper with Product type, net weight +... is tag on the freezer rack

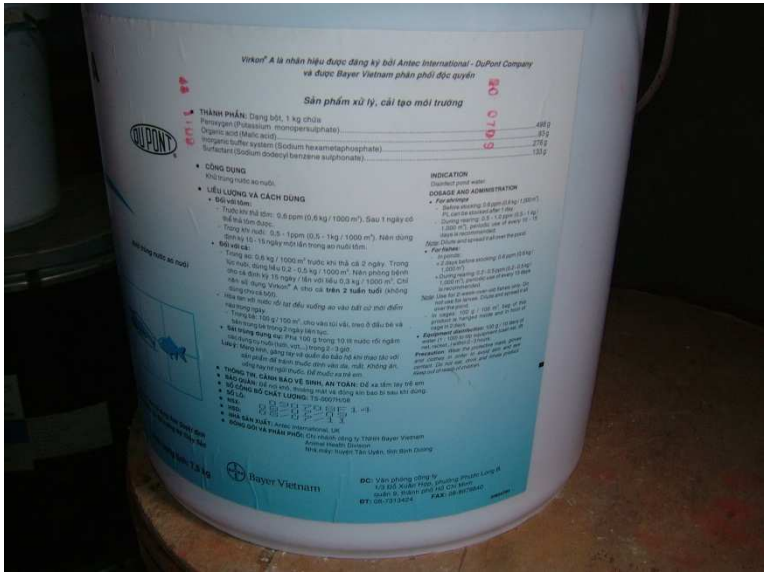
FoodReg
total traceability

Challenge - Training

Duration

Vietnam




Virkon® A là nhãn hiệu được đăng ký bởi Antec International - DuPont Company
và được Bayer Vietnam phân phối độc quyền
Sản phẩm xử lý, cải tạo môi trường
DUPONT
Bayer Vietnam

National LCA Project, Malaysia

The National LCA (Life Cycle Assessment) Project entitled '*A National Initiative To Develop the Lifecycle Inventory Database For The Development of Eco-Friendly Products and Services*' is a mandate to SIRIM from the Government of Malaysia under the Ninth Malaysia Plan 2006-10 to develop the National Life Cycle Inventory Database.

Objective: to develop capacity and infrastructure for conducting life cycle assessment leading to eco-design and improved environmental performance of products and services for the local and export market

Inventory data collection

Identified the following databases to be established:

- Agro-industry: Palm oil and palm oil products; rubber
- Petroleum and Plastic: Upstream and downstream petroleum and natural gas products, petrochemicals, plastics
- Electrical and Electronic products
- Chemical: Agrochemicals, Industrial chemicals
- Heavy industry Iron & Steel, cement, aluminium
- Utilities & Service: Electricity, water supply, transport
- General: Building materials, cleaning agent
- Waste and Recycling: Solid waste, hazardous waste, recycling

Malaysia – palm oil

SIRIM:

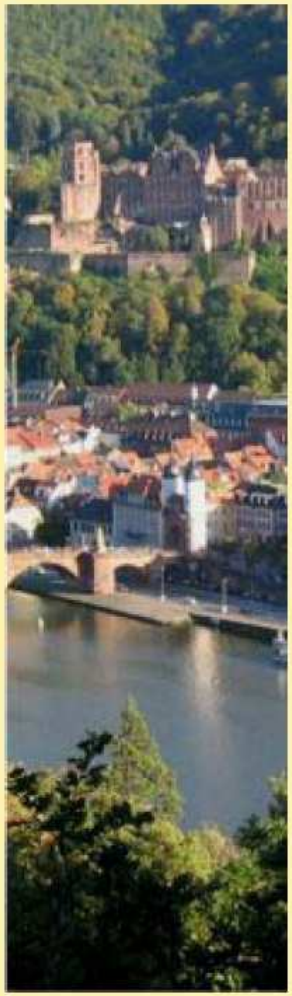
Seminar LCA for Product Branding & Compliance

2 February 2009, Kulim, Kedah

From seminar brochure:

"Businesses, whether manufacturing or services, and irrespective of the sub-sector, must realized that environmental aspects have to be integrated into their activities to **ensure competitiveness** in the local, regional and global market."

ifeu – Institute for Energy and Environmental Research Heidelberg, Germany



LCA of biofuel oil crops:

State of the art balancing scientific accuracy with the demands of policy makers

Dr Guido Reinhardt

International Palm Oil Life Cycle Assessment Conference

Kuala Lumpur, Malaysia, October 19-20, 2009

Findings

Collecting valid and reliable data for life cycle inventories in developing countries to replace generic databases

Constaints

Costs in terms of time needed and payment of software licences are often prohibitive for domestic stakeholders in developing countries

Findings

Most examples of LCA practised primarily seem to be motivated by concerns about the public image of a particular product in the market place, rather by efforts to re-engineer processes and materials

Resembles an earlier wave of ISO certification: companies included environmental audits according to the ISO 14000 series of standards as part of their branding

The most significant driver seems to be a situation, in which a vital product in the export profile of a given developing country is contested on the export markets for its environmental impacts

Findings

LCA is practised as basic research and documentation only by academics, except for subsidiaries of foreign companies, in which LCA is practised as part of the corporate environmental management system

Only these companies will practise LCA as a tool for transformation of processes and products

The large sector of medium and small scale companies have few or no incentives in their national context

Findings

Fragmented activities, e.g. awareness and short training workshops, accessibility to databases, and university research need to be combined into an integrated enabling environment for LCA practices, including a framework of legal regulations and incentives

The adoption of LCA practices in a given country must be understood in the context of:

- **trade and environment policy positions of the national government,**
- **the level of export dependency of the national economy,**
- **and the scope for civil society, in particular the priorities of environmental non-governmental organizations**

Conclusion

(1) LCA/LCM methodologies need to respond to the specific context of developing countries to fully incorporate socio-economic concerns in developing countries; also, the current level and scope of environmental management in a given country must be considered

(2) Research on simplified tools for small producers must be stepped up, and manuals for application must build upon examples relevant to production and services in developing countries

(3) The application of LCA in developing countries must produce immediate and tangible benefits as a contribution to transition towards national objectives of sustainable production and consumption, and as enabling steps to maintain or access positions in global value chains.

A proposed area of action:

Interventions to upgrade small African producers in global value chains

Pro-poor and green growth strategies include efforts for environmental efficiency

At the macro level, Dutch Sustainable Trade funded by the Government of Netherlands takes on the challenge to motivate the dominant companies in fifteen global commodity chains to move towards sustainable production

LCA has an important role in scrutinizing claims about sustainability and clarify dilemmas between developmental and environmental concerns

Knowledge networking – best research and best practices - to upgrade global product chains

Health: Food safety; nutrition, environmental health

Environment: Environmental impact assessment; life cycle assessment; sustainable energy; environmental management

Growth and Employment: Production management, quality control upgrading strategies; business development; marketing

Stability, democracy and rights: Social and labour standards; civil rights; gender equality

Look out for….

Upcoming textbook on Life Cycle Assessment 2013 – chapter 23:
Globalisation and Mainstreaming of LCA

Special session at the 18th SETAC LCA Case Study Symposium 26-28 November 2012 in Copenhagen:
Regional and country based LCA networks: What exists and how do they work?